

REMARKS/RESPONSE

This is in response to the Notification To Comply With Requirements For Patent Applications Containing Nucleotide and/or Amino Acid Sequence Disclosures, dated July 1, 2005.

Applicants respectfully submit herewith a replacement paper copy of the "Sequence Listing" which conforms to 37 CFR §§ 1.821-1.825, a substitute diskette of the "Sequence Listing" in Computer Readable Form, along with a Statement to Support Filing and Submission in Accordance with 37 CFR §§ 1.821 through 1.825. Applicants believe that the application is in compliance with the sequence listing requirements set forth by 37 CFR §§ 1.821 through 1.825. No new matter has been added. Entry of this Sequence Listing into the application is requested.

Applicants are submitting their response herewith within the two-month response period set to expire on December 2, 2006. Applicants believe that no fees are due. However, if a fee is due, the Director is hereby authorized to charge any deficiency in the fees filed, asserted to be filed or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Deposit Account No. 03-2775, under Order No. 12810-00067-US from which the undersigned is authorized to draw.

Respectfully submitted,

By 

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SEQUENCE LISTING

<110> Kogel, Karl-Heinz
 Huckelhoven, Ralph
 Trujillo, Marco

<120> Method for Obtaining the pathogenic resistance in plants

<130> 12810-00067-US

<140> US 10/522,106
 <141> 2005-01-24

<160> 24

<170> PatentIn version 3.3

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 <223> coding for NADPH oxidase (fragment)

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 Ile Glu Met His Asn Tyr Leu Thr Ser Val Tyr Glu Glu Gly Asp Ala
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 Arg Ser Ala Leu Ile Thr Met Leu Gln Ala Leu Asn His Ala Lys Asn
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 ggt gtc gat gta gtg tct ggm act cga gtc cgg aca cat ttt gca aga 193
 Gly Val Asp Val Val Ser Xaa Thr Arg Val Arg Thr His Phe Ala Arg
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 cca aat ttt aag agg gtg ctg tct aag gta gcc gcc aaa cat cct tat 241
 Pro Asn Phe Lys Arg Val Leu Ser Lys Val Ala Ala Lys His Pro Tyr
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 gcc aag ata gga gtg ttc tat tgc gga gct cca gtt ctg gcg cag gaa 289
 Ala Lys Ile Gly Val Phe Tyr Cys Gly Ala Pro Val Leu Ala Gln Glu
 85 90 95
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Gly Val Asp Val Val Ser Xaa Thr Arg Val Arg Thr His Phe Ala Arg			
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Pro Asn Phe Lys Arg Val Leu Ser Lys Val Ala Ala Lys His Pro Tyr			
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Ala Lys Ile Gly Val Phe Tyr Cys Gly Ala Pro Val Leu Ala Gln Glu			
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Asp Arg Ser Ser Asp Asp Gly Glu Leu Val Glu Val Thr Leu Asp	
35 40 45	
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Leu Gln Asp Asp Asp Thr Ile Val Leu Arg Ser Val Glu Pro Ala Ala	
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Gly Glu Leu Thr Gly Gly Pro Ser Ser Ser Ser Ser Arg Ser Arg Ser	
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Pro Ser Ile Arg Arg Ser Ser Ser His Arg Leu Leu Gln Phe Ser Gln	
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Glu Leu Lys Ala Glu Ala Met Ala Arg Ala Arg Gln Phe Ser Gln Asp	
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Pro Ser Gly Leu Glu Ser Ala Leu Ala Ala Arg Ala Ala Arg Arg Gln	
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Arg Ala Gln Leu Asp Arg Thr Arg Ser Gly Ala His Lys Ala Leu Arg	
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Gly Leu Arg Phe Ile Ser Ser Asn Lys Ala Asn Asn Ala Trp Met Glu	
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Thr	Ile	Asn	Lys	Asp	Glu	Leu	Arg	Glu	Ile	Trp	Gln	Gln	Ile	Thr	Asp	
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Asn	Ser	Phe	Asp	Ser	Arg	Leu	Gln	Ile	Phe	Phe	Glu	Met	Val	Asp	Lys	
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Asn	Ala	Asp	Gly	Arg	Ile	Thr	Glu	Ala	Glu	Val	Lys	Glu	Ile	Ile	Met	
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Gln	Asn	Leu	Ala	Gly	Leu	Arg	Lys	Lys	Ser	Ser	Ile	Arg	Lys	Ile	Ser	
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Thr	Thr	Ala	Lys	Gly	Ala	Ala	Glu	Thr	Leu	Lys	Leu	Asn	Met	Ala	Ile	
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Ile	Leu	Leu	Pro	Val	Cys	Arg	Asn	Thr	Ile	Thr	Trp	Leu	Arg	Ser	Thr	
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Cys	Met	Ile	Ile	Ala	Phe	Thr	Leu	Ala	Thr	Arg	Trp	Phe	Arg	Arg	Ser	
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Asn	Lys	Pro	His	Val	Asp	Leu	Gly	Thr	Leu	Met	Thr	Ile	Thr	Ser	Arg	
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Gln Ala Leu Asn His Ala Lys Asn Gly Val Asp Ile Val Ser Gly Thr			
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aaa gtc cgg aca cat ttt gca cga cca aat tgg aga aag gtc ctt tct			2688
Lys Val Arg Thr His Phe Ala Arg Pro Asn Trp Arg Lys Val Leu Ser			
885	890	895	
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Tyr	Met	Asn	Tyr	Ser	Gln	Ala	Leu	Ser	Tyr	Thr	Ser	Gln	Ala	Leu	Ser
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Gln	Asn	Leu	Ala	Gly	Leu	Arg	Lys	Ser	Ser	Ile	Arg	Lys	Ile	Ser	
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Leu	Val	Lys	Leu	Pro	Arg	Pro	Phe	Asp	Lys	Leu	Thr	Gly	Phe	Asn	Ala
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Phe	Trp	Tyr	Ser	His	His	Leu	Phe	Ile	Ile	Val	Tyr	Ile	Ala	Leu	Ile
				565					570						575
Val	His	Gly	Glu	Cys	Leu	Tyr	Leu	Ile	His	Val	Trp	Tyr	Arg	Arg	Thr
			580					585					590		
Thr	Trp	Met	Tyr	Leu	Ser	Val	Pro	Val	Cys	Leu	Tyr	Val	Gly	Glu	Arg
	595						600					605			
Ile	Leu	Arg	Phe	Phe	Arg	Ser	Gly	Ser	Tyr	Ser	Val	Arg	Leu	Leu	Lys
	610					615					620				
Val	Ala	Ile	Tyr	Pro	Gly	Asn	Val	Leu	Thr	Leu	Gln	Met	Ser	Lys	Pro
625					630					635					640
Pro	Thr	Phe	Arg	Tyr	Lys	Ser	Gly	Gln	Tyr	Met	Phe	Val	Gln	Cys	Pro
			645						650					655	
Ala	Val	Ser	Pro	Phe	Glu	Trp	His	Pro	Phe	Ser	Ile	Thr	Ser	Ala	Pro
			660					665					670		
Gly	Asp	Asp	Tyr	Leu	Ser	Ile	His	Val	Arg	Gln	Leu	Gly	Asp	Trp	Thr
	675						680					685			
Arg	Glu	Leu	Lys	Arg	Val	Phe	Ala	Ala	Ala	Cys	Glu	Pro	Pro	Ala	Gly
	690					695				700					
Gly	Lys	Ser	Gly	Leu	Leu	Arg	Ala	Asp	Glu	Thr	Thr	Lys	Lys	Ile	Leu
705					710					715					720
Pro	Lys	Leu	Leu	Ile	Asp	Gly	Pro	Tyr	Gly	Ser	Pro	Ala	Gln	Asp	Tyr
			725						730					735	
Ser	Lys	Tyr	Asp	Val	Leu	Leu	Leu	Val	Gly	Leu	Gly	Ile	Gly	Ala	Thr
			740					745					750		
Pro	Phe	Ile	Ser	Ile	Leu	Lys	Asp	Leu	Leu	Asn	Asn	Ile	Ile	Lys	Met
	755						760					765			

Glu Glu Glu Glu Asp Ala Ser Thr Asp Leu Tyr Pro Pro Met Gly Arg
 770 775 780
 Asn Lys Pro His Val Asp Leu Gly Thr Leu Met Thr Ile Thr Ser Arg
 785 790 795 800
 Pro Lys Lys Ile Leu Lys Thr Thr Asn Ala Tyr Phe Tyr Trp Val Thr
 805 810 815
 Arg Glu Gln Gly Ser Phe Asp Trp Phe Lys Gly Val Met Asn Glu Ile
 820 825 830
 Ala Asp Leu Asp Gln Arg Asn Ile Ile Glu Met His Asn Tyr Leu Thr
 835 840 845
 Ser Val Tyr Glu Glu Gly Asp Ala Arg Ser Ala Leu Ile Thr Met Leu
 850 855 860
 Gln Ala Leu Asn His Ala Lys Asn Gly Val Asp Ile Val Ser Gly Thr
 865 870 875 880
 Lys Val Arg Thr His Phe Ala Arg Pro Asn Trp Arg Lys Val Leu Ser
 885 890 895
 Lys Ile Ser Ser Lys His Pro Tyr Ala Lys Ile Gly Val Phe Tyr Cys
 900 905 910
 Gly Ala Pro Val Leu Ala Gln Glu Leu Ser Lys Leu Cys His Glu Phe
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 Asn Gly Lys Cys Thr Thr Lys Phe Glu Phe His Lys Glu His Phe
 930 935 940

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 <211> 2889
 <212> DNA
 <213> *Nicotiana tabacum*

<220>
 <221> CDS
 <222> (1)..(2886)
 <223> coding for NADPH oxidase

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 Met Arg Gly Leu Pro Gly His Glu Arg Arg Trp Thr Ser Asp Thr Val
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 tct tcc gac aag gat ttt agt ggt gaa tta tcg ccg gga gct gat tcc 96
 Ser Ser Asp Lys Asp Phe Ser Gly Glu Leu Ser Pro Gly Ala Asp Ser
 20 25 30
 ggc tat aat tcc ggt ttt gct tcc gag gag ttt gtt gaa gtc acg ctt 144
 Gly Tyr Asn Ser Gly Phe Ala Ser Glu Glu Phe Val Glu Val Thr Leu
 35 40 45
 gat ctt cag gat gat gat acc att att cta cgg agc gtt gaa ccg gct 192
 Asp Leu Gln Asp Asp Asp Thr Ile Ile Leu Arg Ser Val Glu Pro Ala
 50 55 60
 act gtg att aac att gac gct cct gat ctt ccc gcc gga gtc ggt att 240
 Thr Val Ile Asn Ile Asp Ala Pro Asp Leu Pro Ala Gly Val Gly Ile
 65 70 75 80
 tcc gga gtt tca att gaa act ccg acg tca gca tcg gtg tcg gaa tct 288
 Ser Gly Val Ser Ile Glu Thr Pro Thr Ser Ala Ser Val Ser Glu Ser
 85 90 95
 cga tcg ccg acg atc cgc cgg agt tca tct agt aaa ctt cgt cag ttt 336
 Arg Ser Pro Thr Ile Arg Arg Ser Ser Ser Lys Leu Arg Gln Phe
 100 105 110
 tca cag gag ttg aaa gct gag gcg gtt gcg aaa gcg agg cag ttt tca 384
 Ser Gln Glu Leu Lys Ala Glu Ala Val Ala Lys Ala Arg Gln Phe Ser
 115 120 125
 caa gag ctg aag gcg gag tta agg aga ttc tca tgg agc cat ggg cat 432
 Gln Glu Leu Lys Ala Glu Leu Arg Arg Phe Ser Trp Ser His Gly His
 130 135 140

gcg tct cgc gcg ttt tog ccc tcg tcg ttt ttt caa aac gcc gtc gtt	480
Ala Ser Arg Ala Phe Ser Pro Ser Ser Phe Phe Gln Asn Ala Val Val	
145 150 155 160	
gga aca ggt aac ggc gtg gac tcg gct tta gcg gca cgt gca tta cgt	528
Gly Thr Gly Asn Gly Val Asp Ser Ala Leu Ala Ala Arg Ala Leu Arg	
165 170 175	
cgg caa cgc gcg cag ctt gat cgg act cgt tcc agc gcc cat aga gct	576
Arg Gln Arg Ala Gln Leu Asp Arg Thr Arg Ser Ser Ala His Arg Ala	
180 185 190	
ctt cgt aga ctc aaa ttc att agc aat aac aaa acc aat gga tgg aat	624
Leu Arg Arg Leu Lys Phe Ile Ser Asn Asn Lys Thr Asn Gly Trp Asn	
195 200 205	
gaa gtt gaa aac aat ttc tca aag ctc gct aaa gac ggt tat ctt tac	672
Glu Val Glu Asn Asn Phe Ser Lys Leu Ala Lys Asp Gly Tyr Leu Tyr	
210 215 220	
cgt tcc gat ttc gca caa tgc ata ggt atg aag gat tcg aag gaa ttt	720
Arg Ser Asp Phe Ala Gln Cys Ile Gly Met Lys Asp Ser Lys Glu Phe	
225 230 235 240	
gca ttg gaa tta ttt gat gct ttg agt aga aga aga aga tta aag gtt	768
Ala Leu Glu Leu Phe Asp Ala Leu Ser Arg Arg Arg Arg Leu Lys Val	
245 250 255	
gat aaa att agc aag gag gaa ttg tat gag tac tgg tct caa atc acc	816
Asp Lys Ile Ser Lys Glu Glu Leu Tyr Glu Tyr Trp Ser Gln Ile Thr	
260 265 270	
gat cag agt ttc gat tct cgg ctt cag atc tcc ttc gac atg gtg gac	864
Asp Gln Ser Phe Asp Ser Arg Leu Gln Ile Ser Phe Asp Met Val Asp	
275 280 285	
aag aat gaa gat ggt cga att gct gaa gag gaa gta aaa gag atc atc	912
Lys Asn Glu Asp Gly Arg Ile Ala Glu Glu Glu Val Lys Glu Ile Ile	
290 295 300	
atg cta agt gca tct gca aac aag tta tca aga tta aaa gaa caa gca	960
Met Leu Ser Ala Ser Ala Asn Lys Leu Ser Arg Leu Lys Glu Gln Ala	
305 310 315 320	
gag gag tat gca gct tta atc atg gaa gaa tta gat cct gaa aga ctc	1008
Glu Glu Tyr Ala Ala Leu Ile Met Glu Glu Leu Asp Pro Glu Arg Leu	
325 330 335	
ggc tac att gag cta tgg cag ctg gaa aca ctt ctc ctc caa aag gac	1056
Gly Tyr Ile Glu Leu Trp Gln Leu Glu Thr Leu Leu Leu Lys Asp	
340 345 350	
act tac ctc aac tac agt caa gca cta agt tac acg agc caa gcc ttg	1104
Thr Tyr Leu Asn Tyr Ser Gln Ala Leu Ser Tyr Thr Ser Gln Ala Leu	
355 360 365	
agc caa aac ctt cac gga tta agg aag aaa agc cca ata aaa aga atg	1152
Ser Gln Asn Leu His Gly Leu Arg Lys Lys Ser Pro Ile Lys Arg Met	
370 375 380	
agc aca aaa ctt gtc tat tca ttg caa gaa aac tgg aag aga att tgg	1200
Ser Thr Lys Leu Val Tyr Ser Leu Gln Glu Asn Trp Lys Arg Ile Trp	
385 390 395 400	
gtt ctc act tta tgg att ttg ata atg att ggg ctt ttt ctt tgg aag	1248
Val Leu Thr Leu Trp Ile Leu Ile Met Ile Gly Leu Phe Leu Trp Lys	
405 410 415	
ttc tat cag tac aaa aac aag agt gca ttc cgt gtc atg ggt tat tgc	1296
Phe Tyr Gln Tyr Lys Asn Lys Ser Ala Phe Arg Val Met Gly Tyr Cys	
420 425 430	
ctt gtc acg gct aag ggc gct gct gag act ctc aag ttc aac atg gct	1344
Leu Val Thr Ala Lys Gly Ala Ala Glu Thr Leu Lys Phe Asn Met Ala	
435 440 445	
ctt ata tta ttg cca gta tgc aga aac act att aca tgg ctc agg tcc	1392
Leu Ile Leu Leu Pro Val Cys Arg Asn Thr Ile Thr Trp Leu Arg Ser	
450 455 460	
acc aag ttg agc cat ttt gta ccc ttt gac gac aac atc aac ttt cac	1440

Thr	Lys	Leu	Ser	His	Phe	Val	Pro	Phe	Asp	Asp	Asn	Ile	Asn	Phe	His		
465					470					475					480		
aag	act	gtc	gct	gca	gcc	att	gtc	act	ggg	atc	ata	ctc	cat	gct	ggg	1488	
Lys	Thr	Val	Ala	Ala	Ala	Ile	Val	Thr	Gly	Ile	Ile	Leu	His	Ala	Gly		
				485					490					495			
aac	cat	ctt	gta	tgt	gat	ttc	cca	agg	ctt	ata	cat	gca	gat	gat	caa	1536	
Asn	His	Leu	Val	Cys	Asp	Phe	Pro	Arg	Leu	Ile	His	Ala	Asp	Asp	Gln		
			500					505				510					
gat	tat	caa	agt	ttt	ttg	tcg	aat	gat	ttt	ggc	caa	agt	aag	cct	gga	1584	
Asp	Tyr	Gln	Ser	Phe	Leu	Ser	Asn	Asp	Phe	Gly	Gln	Ser	Lys	Pro	Gly		
		515					520					525					
tac	ata	gac	ctt	gtt	aaa	gga	gtt	gag	ggg	gtg	acg	gga	ata	ata	atg	1632	
Tyr	Ile	Asp	Leu	Val	Lys	Gly	Val	Glu	Gly	Val	Thr	Gly	Ile	Ile	Met		
		530				535					540						
gta	atc	ctt	atg	gcc	att	gct	ttc	act	ctt	gct	aca	cga	tgg	ttt	aga	1680	
Val	Ile	Leu	Met	Ala	Ile	Ala	Phe	Thr	Leu	Ala	Thr	Arg	Trp	Phe	Arg		
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cgg	agc	ctc	att	aag	ttg	ccc	aaa	cct	ttt	gat	aga	ctc	act	ggc	ttc	1728	
Arg	Ser	Leu	Ile	Lys	Leu	Pro	Lys	Pro	Phe	Asp	Arg	Leu	Thr	Gly	Phe		
			565					570						575			
aat	gca	ttc	tgg	tat	tca	cac	cac	ctt	gtc	att	gtc	tac	atc	cta		1776	
Asn	Ala	Phe	Trp	Tyr	Ser	His	His	Leu	Val	Ile	Val	Tyr	Ile	Leu			
			580					585				590					
ctg	atc	atc	cat	ggc	acg	ttc	ctc	ttc	ctt	gtg	cat	aaa	tgg	tac	tcc	1824	
Leu	Ile	Ile	His	Gly	Thr	Phe	Leu	Phe	Leu	Val	His	Lys	Trp	Tyr	Ser		
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aag	acg	acg	tgg	atg	tat	cta	gca	gtt	cct	gtg	ctt	ctc	tac	gca	ggg	1872	
Lys	Thr	Thr	Trp	Met	Tyr	Leu	Ala	Val	Pro	Val	Leu	Leu	Tyr	Ala	Gly		
		610				615					620						
gaa	aga	act	ctt	aga	ttc	ttc	cgg	tca	ggc	ttg	tac	act	gtc	cgg	ctt	1920	
Glu	Arg	Thr	Leu	Arg	Phe	Phe	Arg	Ser	Gly	Leu	Tyr	Thr	Val	Arg	Leu		
625				630					635					640			
ctg	aaa	gta	gca	ata	tat	cct	gga	aat	gtc	ctc	act	cta	caa	atg	tct	1968	
Leu	Lys	Val	Ala	Ile	Tyr	Pro	Gly	Asn	Val	Leu	Thr	Leu	Gln	Met	Ser		
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aag	cct	cct	caa	ttt	cga	tac	aaa	agt	gga	caa	tat	atg	ttt	gtc	cag	2016	
Lys	Pro	Pro	Gln	Phe	Arg	Tyr	Lys	Ser	Gly	Gln	Tyr	Met	Phe	Val	Gln		
			660					665				670					
tgt	cca	gct	gtt	tct	cca	ttc	gag	tgg	cat	cca	ttt	tcc	att	act	tca	2064	
Cys	Pro	Ala	Val	Ser	Pro	Phe	Glu	Trp	His	Pro	Phe	Ser	Ile	Thr	Ser		
		675					680					685					
gct	cct	ggg	gat	gac	tac	ttg	agc	att	cac	atc	cgg	caa	ctt	ggg	gac	2112	
Ala	Pro	Gly	Asp	Asp	Tyr	Leu	Ser	Ile	His	Ile	Arg	Gln	Leu	Gly	Asp		
		690				695					700						
tgg	act	caa	gaa	ctc	aag	cgg	gtc	ttt	tct	gag	gct	tgc	gag	cgg	cca	2160	
Trp	Thr	Gln	Glu	Leu	Lys	Arg	Val	Phe	Ser	Glu	Ala	Cys	Glu	Arg	Pro		
705				710					715					720			
gag	gct	gga	aag	agt	ggc	ctg	ctc	aga	gct	gac	gaa	aac	act	aag	aaa	2208	
Glu	Ala	Gly	Lys	Ser	Gly	Leu	Leu	Arg	Ala	Asp	Glu	Asn	Thr	Lys	Lys		
			725					730						735			
agt	ttg	cca	aag	cta	tta	ata	gat	gga	cct	tac	gga	gct	cca	gca	caa	2256	
Ser	Leu	Pro	Lys	Leu	Leu	Ile	Asp	Gly	Pro	Tyr	Gly	Ala	Pro	Ala	Gln		
		740						745				750					
gat	tac	cga	aaa	tat	gat	gtc	ttg	ctg	ctt	gtt	ggg	ctt	ggc	att	gga	2304	
Asp	Tyr	Arg	Lys	Tyr	Asp	Val	Leu	Leu	Val	Gly	Leu	Gly	Ile	Gly			
		755				760						765					
gca	acg	ccg	ttc	ata	agt	atc	ctg	aaa	gac	ttg	ctc	gtt	aac	atc	gtg	2352	
Ala	Thr	Pro	Phe	Ile	Ser	Ile	Leu	Lys	Asp	Leu	Leu	Val	Asn	Ile	Val		
		770				775						780					
aaa	atg	gag	gag	caa	gca	gat	tta	gcc	tca	gat	ttc	agt	ggg	aac	tca	2400	
Lys	Met	Glu	Glu	Gln	Ala	Asp	Leu	Ala	Ser	Asp	Phe	Ser	Gly	Asn	Ser		

785		790		795		800	
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Asp Met Ser Val Ala Thr Ser Glu Gln Pro Ala Leu Asn Lys Ile Ser							
	805			810		815	
ctg aaa agg aga aag agc act cta aga acc aca aat gca tat ttt tat							2496
Leu Lys Arg Arg Lys Ser Thr Leu Arg Thr Thr Asn Ala Tyr Phe Tyr							
	820			825		830	
tgg gtg acc cgg gag caa gga tca ttt gat tgg ttc aaa ggc gtt atg							2544
Trp Val Thr Arg Glu Gln Gly Ser Phe Asp Trp Phe Lys Gly Val Met							
	835			840		845	
aac gaa gtg gct gaa ctt gat caa agg ggg gtc atc gag atg cat aac							2592
Asn Glu Val Ala Glu Leu Asp Gln Arg Gly Val Ile Glu Met His Asn							
	850			855		860	
tac ttg acg agt gtt tat gag gaa ggg gat gct cgt tca gct ctc att							2640
Tyr Leu Thr Ser Val Tyr Glu Glu Gly Asp Ala Arg Ser Ala Leu Ile							
	865			870		875	
acc atg gtc cag gca ctt aac cat gct aag aat ggg gtt gat att gta							2688
Thr Met Val Gln Ala Leu Asn His Ala Lys Asn Gly Val Asp Ile Val							
	885			890		895	
tca ggc acc agg gtg agg aca cat ttt gct agg cca aat tgg aag aaa							2736
Ser Gly Thr Arg Val Arg Thr His Phe Ala Arg Pro Asn Trp Lys Lys							
	900			905		910	
gta ttt tcc aag acc tta acc aag cat gca aat gca aga ata ggg gtt							2784
Val Phe Ser Lys Thr Leu Thr Lys His Ala Asn Ala Arg Ile Gly Val							
	915			920		925	
ttc tac tgt ggt gca ccc gta tta gca aaa gaa ctc agc aaa ctc tgc							2832
Phe Tyr Cys Gly Ala Pro Val Leu Ala Lys Glu Leu Ser Lys Leu Cys							
	930			935		940	
aaa gag tat aat caa aag ggt gca aca aag ttc gag ttt cac aaa gaa							2880
Lys Glu Tyr Asn Gln Lys Gly Ala Thr Lys Phe Glu Phe His Lys Glu							
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cat ttt tag							2889
His Phe							

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 <212> PRT
 <213> Nicotiana tabacum

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35 40 45	
Asp Leu Gln Asp Asp Asp Thr Ile Ile Leu Arg Ser Val Glu Pro Ala	
50 55 60	
Thr Val Ile Asn Ile Asp Ala Pro Asp Leu Pro Ala Gly Val Gly Ile	
65 70 75 80	
Ser Gly Val Ser Ile Glu Thr Pro Thr Ser Ala Ser Val Ser Glu Ser	
85 90 95	
Arg Ser Pro Thr Ile Arg Arg Ser Ser Ser Lys Leu Arg Gln Phe	
100 105 110	
Ser Gln Glu Leu Lys Ala Glu Ala Val Ala Lys Ala Arg Gln Phe Ser	
115 120 125	
Gln Glu Leu Lys Ala Glu Leu Arg Arg Phe Ser Trp Ser His Gly His	
130 135 140	
Ala Ser Arg Ala Phe Ser Pro Ser Ser Phe Phe Gln Asn Ala Val Val	
145 150 155 160	
Gly Thr Gly Asn Gly Val Asp Ser Ala Leu Ala Ala Arg Ala Leu Arg	

[illegible]

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 Cys Pro Ala Val Ser Pro Phe Glu Trp His Pro Phe Ser Ile Thr Ser
 675 680 685
 Ala Pro Gly Asp Asp Tyr Leu Ser Ile His Ile Arg Gln Leu Gly Asp
 690 695 700
 Trp Thr Gln Glu Leu Lys Arg Val Phe Ser Glu Ala Cys Glu Arg Pro
 705 710 715 720
 Glu Ala Gly Lys Ser Gly Leu Leu Arg Ala Asp Glu Asn Thr Lys Lys
 725 730 735
 Ser Leu Pro Lys Leu Leu Ile Asp Gly Pro Tyr Gly Ala Pro Ala Gln
 740 745 750
 Asp Tyr Arg Lys Tyr Asp Val Leu Leu Leu Val Gly Leu Gly Ile Gly
 755 760 765
 Ala Thr Pro Phe Ile Ser Ile Leu Lys Asp Leu Leu Val Asn Ile Val
 770 775 780
 Lys Met Glu Glu Gln Ala Asp Leu Ala Ser Asp Phe Ser Gly Asn Ser
 785 790 795 800
 Asp Met Ser Val Ala Thr Ser Glu Gln Pro Ala Leu Asn Lys Ile Ser
 805 810 815
 Leu Lys Arg Arg Lys Ser Thr Leu Arg Thr Thr Asn Ala Tyr Phe Tyr
 820 825 830
 Trp Val Thr Arg Glu Gln Gly Ser Phe Asp Trp Phe Lys Gly Val Met
 835 840 845
 Asn Glu Val Ala Glu Leu Asp Gln Arg Gly Val Ile Glu Met His Asn
 850 855 860
 Tyr Leu Thr Ser Val Tyr Glu Glu Gly Asp Ala Arg Ser Ala Leu Ile
 865 870 875 880
 Thr Met Val Gln Ala Leu Asn His Ala Lys Asn Gly Val Asp Ile Val
 885 890 895
 Ser Gly Thr Arg Val Arg Thr His Phe Ala Arg Pro Asn Trp Lys Lys
 900 905 910
 Val Phe Ser Lys Thr Leu Thr Lys His Ala Asn Ala Arg Ile Gly Val
 915 920 925
 Phe Tyr Cys Gly Ala Pro Val Leu Ala Lys Glu Leu Ser Lys Leu Cys
 930 935 940
 Lys Glu Tyr Asn Gln Lys Gly Ala Thr Lys Phe Glu Phe His Lys Glu
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 His Phe

<210> 7

<211> 3733

<212> DNA

<213> Solanum tuberosum

<220>

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<222> (92)..(2980)

<223> coding for NADPH oxidase

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 Met Arg Gly Leu Pro Gly His
 1 5
 gaa cgc cgg tgg acg tcg gat acg gta tct tcc ggc aag gat tta agt 160
 Glu Arg Arg Trp Thr Ser Asp Thr Val Ser Ser Gly Lys Asp Leu Ser
 10 15 20
 ggt gag tca tcg ccg gga act gat tcc ggg aat att tcc ggt ttt gct 208
 Gly Glu Ser Ser Pro Gly Thr Asp Ser Gly Asn Ile Ser Gly Phe Ala

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tcc gag gag ttt gtt gaa gtt ata ctt gat ctt cag gat gat gat acg			256
Ser Glu Glu Phe Val Glu Val Ile Leu Asp Leu Gln Asp Asp Asp Thr			
40	45	50	55
att att cta cgg agc gtt gaa ccg gct act gta atc aac att gat gct			304
Ile Ile Leu Arg Ser Val Glu Pro Ala Thr Val Ile Asn Ile Asp Ala			
60	65	70	
tct gat cct gct acc gga gtc ggt att ggt gga gta tcg att gaa act			352
Ser Asp Pro Ala Thr Gly Val Gly Ile Gly Gly Val Ser Ile Glu Thr			
75	80	85	
ccg gcg tcg ctg act tcg acg tcg gga act cga tcg ccg acg atg cgt			400
Pro Ala Ser Leu Thr Ser Thr Ser Gly Thr Arg Ser Pro Thr Met Arg			
90	95	100	
cgg agt aca tcg aat aaa tta cgt cag ttt tca cag gag ttg aaa gct			448
Arg Ser Thr Ser Asn Lys Leu Arg Gln Phe Ser Gln Glu Leu Lys Ala			
105	110	115	
gag gct gtc gcg aaa gcg aag cat ttc tcg caa gag ctt aaa gcg gag			496
Glu Ala Val Ala Lys Ala Lys His Phe Ser Gln Glu Leu Lys Ala Glu			
120	125	130	135
cta agg aga ttc tca tgg agc cat gga cat gcg tct cgc act ttt tcg			544
Leu Arg Arg Phe Ser Trp Ser His Gly His Ala Ser Arg Thr Phe Ser			
140	145	150	
ccg gcg tcg ttt ttc caa aac gcc gtc gtc ggt aca ggc aac ggt gta			592
Pro Ala Ser Phe Phe Gln Asn Ala Val Val Gly Thr Gly Asn Gly Val			
155	160	165	
gat tcg gct tta gca gct cga gca tta cga cgg cag cgc gct cag ctc			640
Asp Ser Ala Leu Ala Ala Arg Ala Leu Arg Arg Gln Arg Ala Gln Leu			
170	175	180	
gat cgg act cgt tcc agc gct cac aag gct ctt cgt gga ctc aaa ttc			688
Asp Arg Thr Arg Ser Ser Ala His Lys Ala Leu Arg Gly Leu Lys Phe			
185	190	195	
atc agc aat aac aaa act aac gga tgg aat gaa gtt gaa aac aat ttt			736
Ile Ser Asn Asn Lys Thr Asn Gly Trp Asn Glu Val Glu Asn Asn Phe			
200	205	210	215
gct aag ctc gct aaa gac ggt tac ctt tat cgc tcc gat ttc gca caa			784
Ala Lys Leu Ala Lys Asp Gly Tyr Leu Tyr Arg Ser Asp Phe Ala Gln			
220	225	230	
tgc atc ggt atg aag gat tca aag gaa ttt gca ttg gaa ttg ttt gat			832
Cys Ile Gly Met Lys Asp Ser Lys Glu Phe Ala Leu Glu Leu Phe Asp			
235	240	245	
gct ttg agt aga aga aga aga ttg aag gtt gat aag att agc aaa gag			880
Ala Leu Ser Arg Arg Arg Arg Leu Lys Val Asp Lys Ile Ser Lys Glu			
250	255	260	
gaa ttg tat gag tat tgg tct caa atc acc gat cag agt ttc gat tct			928
Glu Leu Tyr Glu Tyr Trp Ser Gln Ile Thr Asp Gln Ser Phe Asp Ser			
265	270	275	
cgg ctt cag atc ttc ttc gac atg gtg gac aag aat gaa gat ggt cga			976
Arg Leu Gln Ile Phe Phe Asp Met Val Asp Lys Asn Glu Asp Gly Arg			
280	285	290	295
att ggt gaa gaa gaa gta aaa gag atc atc atg cta agt gcc tct gca			1024
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aac aaa tta tca aga tta aaa gaa caa gca gag gag tat gca gct ctg			1072
Asn Lys Leu Ser Arg Leu Lys Glu Gln Ala Glu Glu Tyr Ala Ala Leu			
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Gln Leu Glu Thr Leu Leu Gln Lys Asp Thr Tyr Leu Asn Tyr Ser			
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Ser Leu Gln Glu Asn Trp Lys Arg Ile Trp Val Leu Val Leu Trp Ile	
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Pro Gly Asn Val Leu Thr Leu Gln Met Ser Lys Pro Pro Gln Phe Arg	
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Asp Leu Gln Asp Asp Asp Thr Ile Ile Leu Arg Ser Val Glu Pro Ala
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Gly Gly Val Ser Ile Glu Thr Pro Ala Ser Leu Thr Ser Thr Ser Gly
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Phe Ser Gln Glu Leu Lys Ala Glu Ala Val Ala Lys Ala Lys His Phe
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Ser Gln Glu Leu Lys Ala Glu Leu Arg Arg Phe Ser Trp Ser His Gly
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Val Gly Thr Gly Asn Gly Val Asp Ser Ala Leu Ala Ala Arg Ala Leu
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Arg Arg Gln Arg Ala Gln Leu Asp Arg Thr Arg Ser Ser Ala His Lys
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Ala Leu Arg Gly Leu Lys Phe Ile Ser Asn Asn Lys Thr Asn Gly Trp
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Asn Glu Val Glu Asn Asn Phe Ala Lys Leu Ala Lys Asp Gly Tyr Leu
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Tyr Arg Ser Asp Phe Ala Gln Cys Ile Gly Met Lys Asp Ser Lys Glu
 225          230          235          240
Phe Ala Leu Glu Leu Phe Asp Ala Leu Ser Arg Arg Arg Arg Leu Lys
 245          250          255
Val Asp Lys Ile Ser Lys Glu Glu Leu Tyr Glu Tyr Trp Ser Gln Ile
 260          265          270
Thr Asp Gln Ser Phe Asp Ser Arg Leu Gln Ile Phe Phe Asp Met Val
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Asp Lys Asn Glu Asp Gly Arg Ile Gly Glu Glu Glu Val Lys Glu Ile
 290          295          300
Ile Met Leu Ser Ala Ser Ala Asn Lys Leu Ser Arg Leu Lys Glu Gln
 305          310          315          320
Ala Glu Glu Tyr Ala Ala Leu Ile Met Glu Glu Leu Asp Pro Glu Arg
 325          330          335
Leu Gly Tyr Ile Glu Leu Trp Gln Leu Glu Thr Leu Leu Leu Gln Lys
 340          345          350
Asp Thr Tyr Leu Asn Tyr Ser Gln Ala Leu Ser Tyr Thr Ser Gln Ala
 355          360          365
Leu Ser Gln Asn Leu Gln Gly Leu Arg Lys Arg Ser Pro Ile Arg Arg
 370          375          380
Met Ser Thr Lys Leu Val Tyr Ser Leu Gln Glu Asn Trp Lys Arg Ile

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Lys	Phe	Tyr	Leu	Tyr	Lys	Gln	Lys	Ser	Ala	Phe	Gln	Val	Met	Gly	Tyr							
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Cys	Leu	Leu	Thr	Ala	Lys	Gly	Ala	Ala	Glu	Thr	Leu	Lys	Phe	Asn	Met							
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Arg	Arg	Ser	Leu	Ile	Lys	Phe	Pro	Lys	Pro	Phe	Asp	Arg	Leu	Thr	Gly							
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Phe	Asn	Ala	Phe	Trp	Tyr	Ser	His	His	Leu	Leu	Ile	Ile	Val	Tyr	Ile							
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Ser	Lys	Thr	Thr	Trp	Met	Tyr	Leu	Ala	Val	Pro	Val	Leu	Leu	Tyr	Ala							
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Ser	Lys	Pro	Pro	Gln	Phe	Arg	Tyr	Lys	Ser	Gly	Gln	Tyr	Met	Phe	Val							
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Pro	Glu	Ala	Gly																			

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 Lys Val Phe Ser Lys Thr Leu Thr Lys His Ala Asn Ala Arg Ile Gly
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 Val Phe Tyr Cys Gly Ala Pro Ile Leu Ala Lys Glu Leu Ser Lys Leu
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 Glu Phe Val Glu Val Ile Leu Asp Leu Gln Asp Asp Asp Thr Ile Ile
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 Leu Arg Ser Val Glu Pro Ala Thr Val Ile Asn Ile Asp Gly Ser Asp
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 Val Ala Lys Ala Lys His Phe Ser Gln Glu Leu Lys Ala Glu Leu Arg
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 Arg Phe Ser Trp Ser His Gly His Ala Ser Arg Ala Phe Ser Pro Ala
 140 145 150
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 Ser Phe Phe Gln Asn Ala Val Val Gly Thr Gly Asn Gly Val Asp Ser
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810 815 820 825	
aac tcg gac atg agt gct gca aca agt gaa caa cca gct ctc aac aag	2668

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Ile Ser Pro Lys Lys Arg Lys Ser Thr Leu Lys Thr Thr Asn Ala Tyr
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ttt tat tgg gtg acc cgg gag caa gga tca ttt gat tgg ttc aaa ggt 2764
Phe Tyr Trp Val Thr Arg Glu Gln Gly Ser Phe Asp Trp Phe Lys Gly
      860      865      870
gtt atg aat gaa gtg gct gaa ctt gat caa agg ggt gtc atc gag atg 2812
Val Met Asn Glu Val Ala Glu Leu Asp Gln Arg Gly Val Ile Glu Met
      875      880      885
cat aac tac ttg acg agt gtt tat gag gaa ggg gat gca cgt tca gct 2860
His Asn Tyr Leu Thr Ser Val Tyr Glu Glu Gly Asp Ala Arg Ser Ala
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ctc att acc atg gtc cag gca ctt aac cat gct aag aat ggg gtt gat 2908
Leu Ile Thr Met Val Gln Ala Leu Asn His Ala Lys Asn Gly Val Asp
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att gta tca ggc acc agt gtg agg aca cat ttc gcc agg ccg aat tgg 2956
Ile Val Ser Gly Thr Ser Val Arg Thr His Phe Ala Arg Pro Asn Trp
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agg aaa gta ttt tcc aag acc tta acc aag cat gca aat gca aga ata 3004
Arg Lys Val Phe Ser Lys Thr Leu Thr Lys His Ala Asn Ala Arg Ile
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gga gtt ttc tac tgt ggt gca ccc ata tta gct aaa gaa ctc agc caa 3052
Gly Val Phe Tyr Cys Gly Ala Pro Ile Leu Ala Lys Glu Leu Ser Gln
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ctc tgc aaa gag ttt aac caa aag ggc aca aca aag ttc gag ttt cac 3100
Leu Cys Lys Glu Phe Asn Gln Lys Gly Thr Thr Lys Phe Glu Phe His
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aaa gaa cat ttt tagaagggcc tggagtatga ttaatcttgc atcaacggta 3152
Lys Glu His Phe
cacacatcta tcttcggtac cttatattgat tattctactg aagagataac attagtaagg 3212
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<212> PRT

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Thr Val Ile Asn Ile Asp Gly Ser Asp Pro Ala Ser Gly Val Gly Ile
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  115      120      125
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Ser	Leu	Gln	Phe	Asn	Tyr	Arg	Leu	Ile	Thr	Leu	Ile	Leu	Ile	Asn	Tyr		
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Trp	Gln	Leu	Glu	Thr	Leu	Leu	Gln	Lys	Asp	Thr	Tyr	Leu	Asn	Tyr			
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Gln	Lys	Ser	Ala	Phe	Gln	Val	Met	Gly	Tyr	Cys	Leu	Leu	Thr	Ala	Lys		
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Ala	Ile	Val	Thr	Gly	Ile	Ile	Leu	His	Ala	Gly	Asn	His	Leu	Val	Cys		
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Asp	Phe	Pro	Lys	Leu	Ile	His	Ala	Asn	Ser	Thr	Asn	Tyr	Gln	Lys	Tyr		
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Lys	Gly	Val	Glu	Gly	Val	Thr	Gly	Ile	Val	Met	Val	Ile	Leu	Met	Ala		
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Ile	Ala	Phe	Thr	Leu	Ala	Thr	Arg	Trp	Phe	Arg	Arg	Ser	Leu	Ile	Lys		
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Leu	Pro	Lys	Pro	Phe	Asp	Arg	Leu	Thr	Gly	Phe	Asn	Ala	Phe	Trp	Tyr		
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Ser	His	His	Leu	Leu	Ile	Ile	Val	Tyr	Ile	Val	Leu	Ile	Ile	His	Gly		
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Thr	Phe	Leu	Tyr	Leu	Val	His	Asn	Trp	Tyr	Ser	Lys	Thr	Thr	Trp	Met		
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Ser	Phe	Asp	Ser	Val	Ser	Ala	Gly	Lys	Thr	Ala	Val	Gly	Ser	Ala	Ser	
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Val Glu Pro Ala Thr Ala Ile Asn Val Ile Gly Asp Ile Ser Asp Asp	
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Asn Thr Gly Ile Met Thr Pro Val Ser Ile Ser Arg Ser Pro Thr Met	
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Lys Arg Thr Ser Ser Asn Arg Phe Arg Gln Phe Ser Gln Glu Leu Lys	
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gcc gaa gct gtg gcg aaa gcg aaa cag tta tct cag gag ttg aaa cga	386
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Phe Ser Trp Ser Arg Ser Phe Ser Gly Asn Leu Thr Thr Thr Ser Thr	
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Thr Glu Glu Glu Val Lys Glu Ile Ile Met Leu Ser Ala Ser Ala Asn	
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Ala	Glu	Thr	Leu	Lys	Phe	Asn	Met	Ala	Leu	Ile	Leu	Phe	Pro	Val	Cys	
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Arg	Asn	Thr	Ile	Thr	Trp	Leu	Arg	Ser	Thr	Arg	Leu	Ser	Tyr	Phe	Val	
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Pro	Phe	Asp	Asp	Asn	Ile	Asn	Phe	His	Lys	Thr	Ile	Ala	Gly	Ala	Ile	
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Val	Val	Ala	Val	Ile	Leu	His	Ile	Gly	Asp	His	Leu	Ala	Cys	Asp	Phe	
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Phe	Thr	Leu	Ala	Thr	Arg	Trp	Phe	Arg	Arg	Asn	Leu	Val	Lys	Leu	Pro	
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Val Phe Ser Glu Val Cys Glu Pro Pro Val Gly Gly Lys Ser Gly Leu
705      710      715
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Leu Arg Ala Asp Glu Thr Thr Lys Lys Ser Leu Pro Lys Leu Leu Ile
720      725      730
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Asp Gly Pro Tyr Gly Ala Pro Ala Gln Asp Tyr Arg Lys Tyr Asp Val
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Leu Lys Asp Leu Leu Asn Asn Ile Val Lys Met Glu Glu His Ala Asp
765      770      775      780
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785      790      795
ggg gac acg cca aga cga aag aga ata cta aaa acc aca aat gct tat 2450
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Val Met Asn Glu Val Ala Glu Leu Asp Gln Arg Gly Val Ile Glu Met
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His Asn Tyr Leu Thr Ser Val Tyr Glu Glu Gly Asp Ala Arg Ser Ala
845      850      855      860
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Leu Ile Thr Met Val Gln Ala Leu Asn His Ala Lys Asn Gly Val Asp
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Lys Glu His Phe
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Thr Arg Glu Gln Gly Ser Phe Asp Trp Phe Lys Gly Val Met Asn Glu
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Cys Gly Val Pro Val Leu Gly Lys Glu Leu Ser Lys Leu Cys Asn Thr
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Glu	Trp	Phe	Lys	Gly	Ile	Met	Asp	Glu	Ile	Ser	Glu	Leu	Asp	Glu Glu
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Gly	Ile	Ile	Glu	Leu	His	Asn	Tyr	Cys	Thr	Ser	Val	Tyr	Glu	Glu Gly
				820					825					830
Asp	Ala	Arg	Val	Ala	Leu	Ile	Ala	Met	Leu	Gln	Ser	Leu	Gln	His Ala
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Lys	Asn	Gly	Val	Asp	Val	Val	Ser	Gly	Thr	Arg	Val	Lys	Ser	His Phe
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Ala	Lys	Pro	Asn	Trp	Arg	Gln	Val	Tyr	Lys	Lys	Ile	Ala	Val	Gln His
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865					870				875					

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 Lys Phe Asp Phe His Lys Glu Asn Phe
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 <223> coding for NADPH oxidase

<220>
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 <223> n is a, c, g, or t

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 ataccaatta ttaattctttt gtcattctttt tccttctcgc gttcatatat actggaatat 180
 acatcttttt ttcaacctat ctcttttcat tttcaagaat tcgggttcca taaatagtag 240
 gttcactact tttattttcaa cctccttaaa gtttattcat tcatattttt tctcaaagaa 300
 aaaactatag aa atg caa aat tcg gaa aat cat cat ccg cac cac cag cac 351
 Met Gln Asn Ser Glu Asn His His Pro His His Gln His
 1 5 10
 cac cat tcg gac aca gag ata att gga aat gat aga gcg tcg tac agt 399
 His His Ser Asp Thr Glu Ile Ile Gly Asn Asp Arg Ala Ser Tyr Ser
 15 20 25
 ggt ccg tta agc gga ccg tta aac aaa cga ggc ggc aaa aag agt gcg 447
 Gly Pro Leu Ser Gly Pro Leu Asn Lys Arg Gly Gly Lys Lys Ser Ala
 30 35 40 45
 aga ttt aac att cct gaa tct acc gac atc gga acc agt gtc gga acc 495
 Arg Phe Asn Ile Pro Glu Ser Thr Asp Ile Gly Thr Ser Val Gly Thr
 50 55 60
 ggc ggc aag tcc aat gat gat gcg tac gtt gaa atc act ctc gat gtc 543
 Gly Gly Lys Ser Asn Asp Asp Ala Tyr Val Glu Ile Thr Leu Asp Val
 65 70 75
 cgc gaa gat tcc gtc gct gtc cac agt gtc aaa act gcc ggc ggt gat 591
 Arg Glu Asp Ser Val Ala Val His Ser Val Lys Thr Ala Gly Gly Asp
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 gac gtg gaa gat ccc gag ctg gct tta ttg gct aaa ggc tta gag aag 639
 Asp Val Glu Asp Pro Glu Leu Ala Leu Leu Ala Lys Gly Leu Glu Lys
 95 100 105
 aag tcc act tta gga tct tca ctt gtt cga aat gct tcg tct aga att 687
 Lys Ser Thr Leu Gly Ser Ser Leu Val Arg Asn Ala Ser Ser Arg Ile
 110 115 120 125
 cgg caa gtg tca caa gag ctc agg cgt ttg gct tcc tta aat aaa cgc 735
 Arg Gln Val Ser Gln Glu Leu Arg Arg Leu Ala Ser Leu Asn Lys Arg
 130 135 140
 cca att cct act gga agg ttc gac agg aat aaa tca gct gct gct cat 783
 Pro Ile Pro Thr Gly Arg Phe Asp Arg Asn Lys Ser Ala Ala Ala His
 145 150 155
 gct ctt aaa ggt ctc aag ttt att agt aag acc gac ggc ggc gct ggt 831
 Ala Leu Lys Gly Leu Lys Phe Ile Ser Lys Thr Asp Gly Gly Ala Gly
 160 165 170

tgg gcc gcc gtc gag aag cgg ttc gat gag att act gct tct act act	879
Trp Ala Ala Val Glu Lys Arg Phe Asp Glu Ile Thr Ala Ser Thr Thr	
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Gly Leu Leu Pro Arg Ala Lys Phe Gly Glu Cys Ile Gly Met Asn Lys	
190 195 200 205	
gag tct aag gaa ttt gct gtt gag cta tat gat gcg cta gct cgg agg	975
Glu Ser Lys Glu Phe Ala Val Glu Leu Tyr Asp Ala Leu Ala Arg Arg	
210 215 220	
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Arg Asn Ile Thr Thr Asp Ser Ile Asn Lys Ala Gln Leu Lys Glu Phe	
225 230 235	
tgg gac caa gtg gct gac caa agt ttt gat tct cgc ctt caa aca ttt	1071
Trp Asp Gln Val Ala Asp Gln Ser Phe Asp Ser Arg Leu Gln Thr Phe	
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Phe Asp Met Val Asp Lys Asp Ala Asp Gly Arg Ile Thr Glu Glu Glu	
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gtc aga gag att ata ggc ctt agc gcg tcg gcc aac agg ctg tca aca	1167
Val Arg Glu Ile Ile Gly Leu Ser Ala Ser Ala Asn Arg Leu Ser Thr	
270 275 280 285	
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Ile Gln Lys Gln Ala Asp Glu Tyr Ala Ala Met Ile Met Glu Glu Leu	
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Asp Pro Asn Asn Leu Gly Tyr Ile Met Ile Glu Asn Leu Glu Met Leu	
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Leu Leu Gln Ala Pro Asn Gln Ser Val Gln Arg Gly Gly Glu Ser Arg	
320 325 330	
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Asn Leu Ser Gln Met Leu Ser Gln Lys Leu Lys His Thr Gln Glu Arg	
335 340 345	
aat cca ata gta aga tgg tac aag agt ttc atg tac ttt ttg ctg gat	1407
Asn Pro Ile Val Arg Trp Tyr Lys Ser Phe Met Tyr Phe Leu Leu Asp	
350 355 360 365	
aat tgg caa aga gtt tgg gta ttg tta ctg tgg att gga att atg gct	1455
Asn Trp Gln Arg Val Trp Val Leu Leu Leu Trp Ile Gly Ile Met Ala	
370 375 380	
ggt cta ttt aca tgg aaa tat ata cag tat aaa gaa aaa gct gca tat	1503
Gly Leu Phe Thr Trp Lys Tyr Ile Gln Tyr Lys Glu Lys Ala Ala Tyr	
385 390 395	
aaa gtc atg ggt ccc tgt gtg tgt ttt gcc aaa ggt gct gct gaa aca	1551
Lys Val Met Gly Pro Cys Val Cys Phe Ala Lys Gly Ala Ala Glu Thr	
400 405 410	
ctc aag ctc aac atg gca att att tta ttt ccg gtt tgc aga aac acg	1599
Leu Lys Leu Asn Met Ala Ile Ile Leu Phe Pro Val Cys Arg Asn Thr	
415 420 425	
atc aca tgg ctt cga aat aag acc aga tta ggt gct gct gtt cct ttt	1647
Ile Thr Trp Leu Arg Asn Lys Thr Arg Leu Gly Ala Ala Val Pro Phe	
430 435 440 445	
gat gat aac ctt aat ttt cac aaa gtg ata gca gtg gca att gct ctt	1695
Asp Asp Asn Leu Asn Phe His Lys Val Ile Ala Val Ala Ile Ala Leu	
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ggg gtt gga ata cac gga cta tct cac ttg aca tgt gat ttt cct cgg	1743
Gly Val Gly Ile His Gly Leu Ser His Leu Thr Cys Asp Phe Pro Arg	
465 470 475	
ctt tta aat gct agt gaa gaa gaa tat gaa cca atg aag tac tat ttt	1791
Leu Leu Asn Ala Ser Glu Glu Glu Tyr Glu Pro Met Lys Tyr Tyr Phe	
480 485 490	
gga gat cag cca gaa agc tat tgg tgg ttt ata aaa gga gta gaa ggg	1839

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Val	Thr	Gly	Ile	Ile	Met	Val	Val	Leu	Met	Ala	Ile	Ala	Phe	Thr	Leu	
510						515					520				525	
gca	acc	cca	tgg	ttt	aga	agg	aat	aga	ggt	agt	ttg	cca	aaa	cca	ttt	1935
Ala	Thr	Pro	Trp	Phe	Arg	Arg	Asn	Arg	Val	Ser	Leu	Pro	Lys	Pro	Phe	
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cac	aaa	ctc	act	gga	tnt	aat	gcc	ttt	tgg	tac	tct	cac	cat	ctc	ttt	1983
His	Lys	Leu	Thr	Gly	Xaa	Asn	Ala	Phe	Trp	Tyr	Ser	His	His	Leu	Phe	
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Val	Ile	Val	Tyr	Thr	Leu	Phe	Ile	Val	His	Gly	Glu	Lys	Leu	Tyr	Ile	
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acc	aaa	gat	tgg	tac	aag	aga	acc	gac	atg	gat	gta	ctt	tta	act	atc	2079
Thr	Lys	Asp	Trp	Tyr	Lys	Arg	Thr	Asp	Met	Asp	Val	Leu	Leu	Thr	Ile	
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cca	atc	ata	ctc	tat	gct	agt	gaa	agg	ttg	att	agg	gca	ttc	agg	tca	2127
Pro	Ile	Ile	Leu	Tyr	Ala	Ser	Glu	Arg	Leu	Ile	Arg	Ala	Phe	Arg	Ser	
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agc	att	aaa	gct	ggt	aag	att	ttg	aag	gtg	gca	gta	tat	cca	gga	aat	2175
Ser	Ile	Lys	Ala	Val	Lys	Ile	Leu	Lys	Val	Ala	Val	Tyr	Pro	Gly	Asn	
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gtg	ttg	gca	ctt	cac	atg	tca	aaa	cca	cag	ggc	tac	aaa	tac	aaa	agt	2223
Val	Leu	Ala	Leu	His	Met	Ser	Lys	Pro	Gln	Gly	Tyr	Lys	Tyr	Lys	Ser	
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ggg	caa	tac	atg	ttt	gtc	aac	tgt	gct	gca	ggt	tct	cca	ttt	gag	tgg	2271
Gly	Gln	Tyr	Met	Phe	Val	Asn	Cys	Ala	Ala	Val	Ser	Pro	Phe	Glu	Trp	
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cat	cca	ttt	tca	att	act	tcg	gcc	cca	gga	gat	gac	tat	ctc	agt	gtc	2319
His	Pro	Phe	Ser	Ile	Thr	Ser	Ala	Pro	Gly	Asp	Asp	Tyr	Leu	Ser	Val	
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cat	att	cga	act	ctt	ggt	gat	tgg	acc	agg	caa	ctt	aaa	act	gtt	ttc	2367
His	Ile	Arg	Thr	Leu	Gly	Asp	Trp	Thr	Arg	Gln	Leu	Lys	Thr	Val	Phe	
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tcc	gag	gtt	tgc	cag	cca	cca	cct	aat	gga	aaa	agt	gga	ctc	ctc	aga	2415
Ser	Glu	Val	Cys	Gln	Pro	Pro	Pro	Asn	Gly	Lys	Ser	Gly	Leu	Leu	Arg	
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gct	gac	tac	ttg	caa	gga	gag	aat	aat	cct	aat	ttc	cca	agg	gtg	tta	2463
Ala	Asp	Tyr	Leu	Gln	Gly	Glu	Asn	Asn	Pro	Asn	Phe	Pro	Arg	Val	Leu	
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ata	gat	gga	cca	tat	gga	gca	cca	gca	caa	gac	tac	aag	aaa	tat	gag	2511
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gtg	ggt	ttg	gtg	gta	ggt	ctt	gga	att	gga	gct	aca	cca	atg	atc	agt	2559
Val	Val	Leu	Leu	Val	Gly	Leu	Gly	Ile	Gly	Ala	Thr	Pro	Met	Ile	Ser	
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att	ggt	aaa	gac	att	gtc	aac	aac	atg	aag	gca	atg	gac	gaa	gaa	gaa	2607
Ile	Val	Lys	Asp	Ile	Val	Asn	Asn	Met	Lys	Ala	Met	Asp	Glu	Glu	Glu	
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aat	tcc	ttg	gaa	gat	gga	cac	aat	aat	aat	atg	gca	cca	aat	tct	agc	2655
Asn	Ser	Leu	Glu	Asp	Gly	His	Asn	Asn	Asn	Met	Ala	Pro	Asn	Ser	Ser	
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ccc	aat	att	gca	aaa	aat	aag	ggt	aat	aaa	tca	ggt	tca	gca	agt	gga	2703
Pro	Asn	Ile	Ala	Lys	Asn	Lys	Gly	Asn	Lys	Ser	Gly	Ser	Ala	Ser	Gly	
				785					790						795	
gga	aat	aat	ttc	aat	aca	agg	aga	gca	tat	ttc	tat	tgg	gtt	act	aga	2751
Gly	Asn	Asn	Phe	Asn	Thr	Arg	Arg	Ala	Tyr	Phe	Tyr	Trp	Val	Thr	Arg	
				800					805						810	
gaa	caa	ggt	tca	ttt	gat	tgg	ttc	aaa	ggt	ata	atg	aat	gaa	gct	gct	2799
Glu	Gln	Gly	Ser	Phe	Asp	Trp	Phe	Lys	Gly	Ile	Met	Asn	Glu	Ala	Ala	

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      815              820              825
gaa atg gac cat aag gga gta att gaa atg cat aat tat tgt act agt 2847
Glu Met Asp His Lys Gly Val Ile Glu Met His Asn Tyr Cys Thr Ser
830              835              840
ggt tat gaa gaa ggt gat gct cgt tct gct ctt att act atg ctt cag 2895
Val Tyr Glu Glu Gly Asp Ala Arg Ser Ala Leu Ile Thr Met Leu Gln
      850              855              860
tct ctt cac cat gcc aaa aat ggt gtt gac att gtc tct ggc acc aga 2943
Ser Leu His His Ala Lys Asn Gly Val Asp Ile Val Ser Gly Thr Arg
      865              870              875
ggt aag tca cat ttt gct aaa cct aat tgg cgt aat gtc tac aaa cgc 2991
Val Lys Ser His Phe Ala Lys Pro Asn Trp Arg Asn Val Tyr Lys Arg
      880              885              890
att gct ctc aac cac cct gag gct aaa gtt ggg gtc ttc tat tgt ggg 3039
Ile Ala Leu Asn His Pro Glu Ala Lys Val Gly Val Phe Tyr Cys Gly
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gca cca gca ctg acc aaa gaa cta aga caa cac gcc ttg gat ttt tca 3087
Ala Pro Ala Leu Thr Lys Glu Leu Arg Gln His Ala Leu Asp Phe Ser
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cac aag aca tct acc aag ttt gat ttc cat aaa gaa aat ttt 3129
His Lys Thr Ser Thr Lys Phe Asp Phe His Lys Glu Asn Phe
      930              935
tgagcaaaga atagaccatt aagcagagca ttaaaatttc atcaaaacag ctaaggacac 3189
agggtgtttt atagaagtct accaactctc cctattgtgt acagataatg ttgcacttca 3249
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<211> 939

<212> PRT

<213> Nicotiana tabacum

<220>

<221> misc_feature

<222> (547)..(547)

<223> The 'Xaa' at location 547 stands for Tyr, Cys, Ser, or Phe.

<400> 16

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Ser Gly Pro Leu Asn Lys Arg Gly Gly Lys Lys Ser Ala Arg Phe Asn
      35              40              45
Ile Pro Glu Ser Thr Asp Ile Gly Thr Ser Val Gly Thr Gly Gly Lys
      50              55              60
Ser Asn Asp Asp Ala Tyr Val Glu Ile Thr Leu Asp Val Arg Glu Asp
      65              70              75              80
Ser Val Ala Val His Ser Val Lys Thr Ala Gly Gly Asp Asp Val Glu
      85              90              95
Asp Pro Glu Leu Ala Leu Leu Ala Lys Gly Leu Glu Lys Lys Ser Thr
      100              105              110
Leu Gly Ser Ser Leu Val Arg Asn Ala Ser Ser Arg Ile Arg Gln Val
      115              120              125
Ser Gln Glu Leu Arg Arg Leu Ala Ser Leu Asn Lys Arg Pro Ile Pro
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Thr Gly Arg Phe Asp Arg Asn Lys Ser Ala Ala Ala His Ala Leu Lys
      145              150              155              160
Gly Leu Lys Phe Ile Ser Lys Thr Asp Gly Ala Gly Trp Ala Ala
      165              170              175
Val Glu Lys Arg Phe Asp Glu Ile Thr Ala Ser Thr Thr Gly Leu Leu

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Glu	Phe	Ala	Val	Glu	Leu	Tyr	Asp	Ala	Leu	Ala	Arg	Arg	Arg	Asn	Ile							
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Thr	Thr	Asp	Ser	Ile	Asn	Lys	Ala	Gln	Leu	Lys	Glu	Phe	Trp	Asp	Gln							
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Val	Ala	Asp	Gln	Ser	Phe	Asp	Ser	Arg	Leu	Gln	Thr	Phe	Phe	Asp	Met							
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Val	Asp	Lys	Asp	Ala	Asp	Gly	Arg	Ile	Thr	Glu	Glu	Glu	Val	Arg	Glu							
			260					265					270									
Ile	Ile	Gly	Leu	Ser	Ala	Ser	Ala	Asn	Arg	Leu	Ser	Thr	Ile	Gln	Lys							
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Gln	Ala	Asp	Glu	Tyr	Ala	Ala	Met	Ile	Met	Glu	Glu	Leu	Asp	Pro	Asn							
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Asn	Leu	Gly	Tyr	Ile	Met	Ile	Glu	Asn	Leu	Met	Leu	Leu	Leu	Leu	Gln							
305				310						315					320							
Ala	Pro	Asn	Gln	Ser	Val	Gln	Arg	Gly	Gly	Glu	Ser	Arg	Asn	Leu	Ser							
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Gln	Met	Leu	Ser	Gln	Lys	Leu	Lys	His	Thr	Gln	Glu	Arg	Asn	Pro	Ile							
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Val	Arg	Trp	Tyr	Lys	Ser	Phe	Met	Tyr	Phe	Leu	Leu	Asp	Asn	Trp	Gln							
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Arg	Val	Trp	Val	Leu	Leu	Leu	Trp	Ile	Gly	Ile	Met	Ala	Gly	Leu	Phe							
		370				375					380											
Thr	Trp	Lys	Tyr	Ile	Gln	Tyr	Lys	Glu	Lys	Ala	Ala	Tyr	Lys	Val	Met							
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Gly	Pro	Cys	Val	Cys	Phe	Ala	Lys	Gly	Ala	Ala	Glu	Thr	Leu	Lys	Leu							
				405					410				415									
Asn	Met	Ala	Ile	Ile	Leu	Phe	Pro	Val	Cys	Arg	Asn	Thr	Ile	Thr	Trp							
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Leu	Arg	Asn	Lys	Thr	Arg	Leu	Gly	Ala	Ala	Val	Pro	Phe	Asp	Asp	Asn							
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Ile	His	Gly	Leu	Ser	His	Leu	Thr	Cys	Asp	Phe	Pro	Arg	Leu	Leu	Asn							
465				470						475</												

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 675 680 685
 Cys Gln Pro Pro Pro Asn Gly Lys Ser Gly Leu Leu Arg Ala Asp Tyr
 690 695 700
 Leu Gln Gly Glu Asn Asn Pro Asn Phe Pro Arg Val Leu Ile Asp Gly
 705 710 715 720
 Pro Tyr Gly Ala Pro Ala Gln Asp Tyr Lys Lys Tyr Glu Val Val Leu
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 Leu Val Gly Leu Gly Ile Gly Ala Thr Pro Met Ile Ser Ile Val Lys
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 Asp Ile Val Asn Asn Met Lys Ala Met Asp Glu Glu Glu Asn Ser Leu
 755 760 765
 Glu Asp Gly His Asn Asn Asn Met Ala Pro Asn Ser Ser Pro Asn Ile
 770 775 780
 Ala Lys Asn Lys Gly Asn Lys Ser Gly Ser Ala Ser Gly Gly Asn Asn
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 Phe Asn Thr Arg Arg Ala Tyr Phe Tyr Trp Val Thr Arg Glu Gln Gly
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 Ser Phe Asp Trp Phe Lys Gly Ile Met Asn Glu Ala Ala Glu Met Asp
 820 825 830
 His Lys Gly Val Ile Glu Met His Asn Tyr Cys Thr Ser Val Tyr Glu
 835 840 845
 Glu Gly Asp Ala Arg Ser Ala Leu Ile Thr Met Leu Gln Ser Leu His
 850 855 860
 His Ala Lys Asn Gly Val Asp Ile Val Ser Gly Thr Arg Val Lys Ser
 865 870 875 880
 His Phe Ala Lys Pro Asn Trp Arg Asn Val Tyr Lys Arg Ile Ala Leu
 885 890 895
 Asn His Pro Glu Ala Lys Val Gly Val Phe Tyr Cys Gly Ala Pro Ala
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<210> 17

<211> 2532

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<213> Oryza sativa

<220>

<221> CDS

<222> (1)..(2529)

<223> coding for NADPH oxidase

<400> 17

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 Gly Leu Pro Arg Pro Pro Gly Ala Gly Ala Gly Ala Ala Gly Gly
 20 25 30
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 Phe Ala Arg Gly Leu Met Lys Gln Pro Ser Arg Leu Ala Ser Gly Val
 35 40 45
 agg cag ttc gcg tcg agg gtg tcg atg aag gtg ccg gag ggg gtg ggg 192
 Arg Gln Phe Ala Ser Arg Val Ser Met Lys Val Pro Glu Gly Val Gly
 50 55 60
 ggg atg ccg ccc ggt ggc ggg agg atg acg ccg atg cag tcc agc gcg 240
 Gly Met Arg Pro Gly Gly Gly Arg Met Thr Arg Met Gln Ser Ser Ala
 65 70 75 80

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Gln	Val	Gly	Leu	Arg	Gly	Leu	Arg	Phe	Leu	Asp	Lys	Thr	Ser	Gly	Gly	
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aag	gag	ggg	tgg	aag	tcc	gtc	gag	cgc	cgc	ttc	gac	gag	atg	aac	cgc	336
Lys	Glu	Gly	Trp	Lys	Ser	Val	Glu	Arg	Phe	Asp	Glu	Met	Asn	Arg		
			100					105					110			
aac	ggc	cgc	ctc	ccc	aag	gag	agc	ttc	ggc	aag	tgc	atc	ggc	atg	ggg	384
Asn	Gly	Arg	Leu	Pro	Lys	Glu	Ser	Phe	Gly	Lys	Cys	Ile	Gly	Met	Gly	
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Asp	Ser	Lys	Glu	Phe	Ala	Gly	Glu	Leu	Phe	Val	Ala	Leu	Ala	Arg	Arg	
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Arg	Asn	Leu	Glu	Pro	Glu	Asp	Gly	Ile	Thr	Lys	Glu	Gln	Leu	Lys	Glu	
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Phe	Trp	Glu	Glu	Met	Thr	Asp	Gln	Asn	Phe	Asp	Ser	Arg	Leu	Arg	Ile	
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Phe	Phe	Asp	Met	Cys	Asp	Lys	Asn	Gly	Asp	Gly	Met	Leu	Thr	Glu	Asp	
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gag	gtc	aag	gag	gtt	att	ata	ctg	agt	gcg	tcg	gcg	aac	aag	ctg	gcg	624
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Lys	Leu	Lys	Gly	His	Ala	Ala	Thr	Tyr	Ala	Ser	Leu	Ile	Met	Glu	Glu	
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Leu	Asp	Pro	Asp	Asp	Arg	Gly	Tyr	Ile	Glu	Ile	Trp	Gln	Leu	Glu	Thr	
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Ser	Pro	Leu	Lys	Arg	His	Val	Ser	Arg	Thr	Val	Asp	Phe	Val	His	Glu	
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Gln	Val	Met	Gly	His	Cys	Val	Cys	Val	Ala	Lys	Gly	Ala	Ala	Glu	Val	
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Leu	Lys	Leu	Asn	Met	Ala	Leu	Ile	Leu	Leu	Pro	Val	Cys	Arg	Asn	Thr	
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Val	Leu	Ala	Tyr	Val	Leu	Leu	Val	Val	His	Ser	Tyr	Phe	Ile	Phe	Leu	
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Thr	Arg	Glu	Trp	Tyr	Lys	Lys	Thr	Thr	Trp	Met	Tyr	Leu	Ile	Val	Pro	
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Ser	Phe	Glu	Trp	Phe	Lys	Gly	Val	Met	Asn	Asp	Val	Ala	Glu	Ser	Asp	

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His Asn Asn Ile Ile Glu Met	His Asn Tyr Leu Thr Ser Val Tyr Glu					
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Glu Gly Asp Ala Arg Ser Ala Leu Ile Ala Met Val Gln Ser Leu Gln						
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His Ala Lys Asn Gly Val Asp Ile Val Ser Gly Ser Arg Ile Arg Thr						
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Ala His Lys Asn Ser Arg Ile Gly Val Phe Tyr Cys Gly Ser Pro Thr						
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Asp Ser Lys Glu Phe Ala Gly Glu Leu Phe Val Ala Leu Ala Arg Arg	
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Arg Asn Leu Glu Pro Glu Asp Gly Ile Thr Lys Glu Gln Leu Lys Glu	
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Leu	Thr	Lys	Gln	Leu	Lys	Asp	Leu	Ser	Lys	Glu	Phe	Ser	Gln	Thr	Thr	
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Leu Glu Thr Leu Leu Leu Gln Ala Ala Thr Gln Ser Val Ile Thr Ser	
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Cys Asp Phe Pro Arg Leu Leu His Ala Thr Pro Glu Ala Tyr Arg Pro	
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Trp	Met	Tyr	Leu	Val	Val	Pro	Val	Val	Leu	Tyr	Ala	Cys	Glu	Arg	Leu	
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Ile	Arg	Ala	Phe	Arg	Ser	Ser	Ile	Lys	Ala	Val	Thr	Ile	Arg	Lys	Val	
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Ala	Val	Tyr	Pro	Gly	Asn	Val	Leu	Ala	Ile	His	Leu	Ser	Arg	Pro	Gln	
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Asn	Phe	Lys	Tyr	Lys	Ser	Gly	Gln	Tyr	Met	Phe	Val	Asn	Cys	Ala	Ala	
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gtt	tct	cca	ttt	gaa	tgg	cat	cca	ttt	tca	atc	aca	tct	gca	cca	caa	1824
Val	Ser	Pro	Phe	Glu	Trp	His	Pro	Phe	Ser	Ile	Thr	Ser	Ala	Pro	Gln	
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gat	gat	tac	cta	agt	gtt	cac	att	aga	gtt	ctt	ggg	gat	tgg	aca	cga	1872
Asp	Asp	Tyr	Leu	Ser	Val	His	Ile	Arg	Val	Leu	Gly	Asp	Trp	Thr	Arg	
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Ala	Leu	Lys	Gly	Val	Phe	Ser	Glu	Val	Cys	Lys	Pro	Pro	Pro	Ala	Gly	
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Val	Ser	Gly	Leu	Leu	Arg	Ala	Asp	Met	Leu	His	Gly	Ala	Asn	Asn	Pro	
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Ala	Thr	Pro	Met	Ile	Ser	Ile	Val	Lys	Asp	Ile	Val	Asn	Asn	Ile	Lys	
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Met	Asn	Glu	Val	Ala	Glu	Arg	Asp	Ala	Asn	Arg	Val	Ile	Glu	Met	His	
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Asn	Tyr	Cys	Thr	Ser	Val	Tyr	Glu	Glu	Gly	Asp	Ala	Arg	Ser	Ala	Leu	
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Ile	His	Met	Leu	Gln	Ser	Leu	Asn	His	Ala	Lys	Asn	Gly	Val	Asp	Ile	
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Val	Ser	Gly	Thr	Arg	Val	Met	Ser	His	Phe	Ala	Lys	Pro	Asn	Trp	Arg	
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Tyr	Lys	Lys	Pro	Gly	Asn	Ser	Arg	Phe	Thr	Ala	Glu	Asn	Ser	Gln	Arg
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Thr	Arg	Thr	Ala	Pro	Tyr	Val	Asp	Leu	Thr	Val	Asp	Val	Gln	Asp	Asp
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Thr	Val	Ser	Val	His	Ser	Leu	Lys	Met	Glu	Gly	Gly	Ser	Ser	Val	Glu
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Glu	Ser	Pro	Glu	Leu	Thr	Leu	Leu	Lys	Arg	Asn	Arg	Leu	Glu	Lys	Lys
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Thr	Thr	Val	Val	Lys	Arg	Leu	Ala	Ser	Val	Ser	His	Glu	Leu	Lys	Arg
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Leu	Thr	Ser	Val	Ser	Gly	Gly	Ile	Gly	Gly	Arg	Lys	Pro	Pro	Arg	Pro
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Ala	Lys	Leu	Asp	Arg	Thr	Lys	Ser	Ala	Ala	Ser	Gln	Ala	Leu	Lys	Gly
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Leu	Lys	Phe	Ile	Ser	Lys	Thr	Asp	Gly	Gly	Ala	Gly	Trp	Ser	Ala	Val
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Glu	Lys	Arg	Phe	Asn	Gln	Ile	Thr	Ala	Thr	Thr	Gly	Gly	Leu	Leu	Leu
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Arg	Thr	Lys	Phe	Gly	Glu	Cys	Ile	Gly	Met	Thr	Ser	Lys	Asp	Phe	Ala
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Leu	Glu	Leu	Phe	Asp	Ala	Leu	Ala	Arg	Arg	Arg	Asn	Ile	Thr	Gly	Glu
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Val	Ile	Asp	Gly	Asp	Gln	Leu	Lys	Glu	Phe	Trp	Glu	Gln	Ile	Asn	Asp
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Asp	Ala	Asp	Gly	Arg	Leu	Thr	Glu	Asp	Glu	Val	Arg	Glu	Leu	Glu	Ser
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Leu	Glu	Thr	Leu	Leu	Leu	Gln	Ala	Ala	Thr	Gln	Ser	Val	Ile	Thr	Ser
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Thr	Gly	Glu	Arg	Lys	Asn	Leu	Ser	His	Met	Met	Ser	Gln	Arg	Leu	Lys
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Phe	Phe	Leu	Leu	Asp	Asn	Trp	Gln	Arg	Cys	Trp	Val	Ile	Val	Leu	Trp
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Arg	Ser	Pro	Val	Tyr	Pro	Val	Met	Gly	Asp	Cys	Val	Cys	Met	Ala	Lys
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Gly	Ala	Ala	Glu	Thr	Val	Lys	Leu	Asn	Met	Ala	Leu	Ile	Leu	Leu	Pro
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Val Gly Ile Ile Val Gly Val Thr Met His Ala Gly Ala His Leu Ala		
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Cys Asp Phe Pro Arg Leu Leu His Ala Thr Pro Glu Ala Tyr Arg Pro		
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Leu Arg Gln Phe Phe Gly Asp Glu Gln Pro Lys Ser Tyr Trp His Phe		
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Val Asn Ser Val Glu Gly Ile Thr Gly Leu Val Met Val Leu Leu Met		
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Ala Ile Ala Phe Thr Leu Ala Thr Pro Trp Phe Arg Arg Gly Lys Leu		
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Asn Tyr Leu Pro Gly Pro Leu Lys Lys Leu Ala Ser Phe Asn Ala Phe		
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Trp Tyr Thr His His Leu Phe Val Ile Val Tyr Ile Leu Leu Val Ala		
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His Gly Tyr Tyr Leu Tyr Leu Thr Arg Asp Trp His Asn Lys Thr Thr		
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Trp Met Tyr Leu Val Val Pro Val Val Leu Tyr Ala Cys Glu Arg Leu		
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Ala Val Tyr Pro Gly Asn Val Leu Ala Ile His Leu Ser Arg Pro Gln		
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Asn Phe Lys Tyr Lys Ser Gly Gln Tyr Met Phe Val Asn Cys Ala Ala		
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Val Ser Pro Phe Glu Trp His Pro Phe Ser Ile Thr Ser Ala Pro Gln		
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Asp Asp Tyr Leu Ser Val His Ile Arg Val Leu Gly Asp Trp Thr Arg		
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Val Ser Gly Leu Leu Arg Ala Asp Met Leu His Gly Ala Asn Asn Pro		
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Ala Lys Glu Gln Ala Gln Leu Asn Arg Met Glu Asn Gly Thr Ser Glu		
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Pro Gln Arg Ser Lys Lys Glu Ser Phe Arg Thr Arg Arg Ala Tyr Phe		
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Tyr Trp Val Thr Arg Glu Gln Gly Ser Phe Asp Trp Phe Lys Asn Ile		
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Met Asn Glu Val Ala Glu Arg Asp Ala Asn Arg Val Ile Glu Met His		
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Asn Tyr Cys Thr Ser Val Tyr Glu Glu Gly Asp Ala Arg Ser Ala Leu		
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Ile His Met Leu Gln Ser Leu Asn His Ala Lys Asn Gly Val Asp Ile		
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Val Ser Gly Thr Arg Val Met Ser His Phe Ala Lys Pro Asn Trp Arg		
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Asn Val Tyr Lys Arg Ile Ala Met Asp His Pro Asn Thr Lys Val Gly		
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Val Phe Tyr Cys Gly Ala Pro Ala Leu Thr Lys Glu Leu Arg His Leu		
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Tyr Tyr Thr Glu Ser Pro Tyr Asn Arg Gly Glu Ser Ser Ala Asn Val	
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gcg acg aca agc aac tat tac ggt gaa gat gaa cca tac gtg gag atc	144
Ala Thr Thr Ser Asn Tyr Tyr Gly Glu Asp Glu Pro Tyr Val Glu Ile	
35 40 45	
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Thr Leu Asp Ile His Asp Asp Ser Val Ser Val Tyr Gly Leu Lys Ser	
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Pro Asn His Arg Gly Ala Gly Ser Asn Tyr Glu Asp Gln Ser Leu Leu	
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Arg Gln Gly Arg Ser Gly Arg Ser Asn Ser Val Leu Lys Arg Leu Ala	
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Ser Ser Val Ser Thr Gly Ile Thr Arg Val Ala Ser Ser Val Ser Ser	
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Ser Ser Ala Arg Lys Pro Pro Arg Pro Gln Leu Ala Lys Leu Arg Arg	
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Ser Lys Ser Arg Ala Glu Leu Ala Leu Lys Gly Leu Lys Phe Ile Thr	
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Lys Thr Asp Gly Val Thr Gly Trp Pro Glu Val Glu Lys Arg Phe Tyr	
145 150 155 160	
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Val Met Thr Met Thr Asn Asn Gly Leu Leu His Arg Ser Arg Phe Gly	
165 170 175	
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Glu Cys Ile Gly Met Lys Ser Thr Glu Phe Ala Leu Ala Leu Phe Asp	
180 185 190	
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Glu Leu Lys Glu Phe Trp Lys Gln Ile Thr Asp Gln Asp Phe Asp Ser	
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Leu Asn Glu Ala Glu Val Arg Glu Ile Ile Thr Leu Ser Ala Ser Ala	

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Ile	Met	Glu	Glu	Leu	Asp	Pro	Tyr	His	Tyr	Gly	Tyr	Ile	Met	Ile	Glu	
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Pro	Gln	Ser	Arg	Asn	Leu	Gly	Ala	Arg	Phe	Cys	Arg	Gly	Met	Lys	Tyr	
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Cys	Arg	Asn	Thr	Ile	Thr	Trp	Leu	Arg	Thr	Lys	Thr	Lys	Leu	Ser	Ala	
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Ile	Val	Pro	Phe	Asp	Asp	Ser	Leu	Asn	Phe	His	Lys	Val	Ile	Ala	Ile	
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Gly	Ile	Ser	Val	Gly	Val	Gly	Ile	His	Ala	Thr	Ser	His	Leu	Ala	Cys	
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Pro	Gly	Pro	Leu	Lys	Lys	Ile	Thr	Gly	Phe	Asn	Ala	Phe	Trp	Tyr	Ser	
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His	His	Leu	Phe	Val	Ile	Val	Tyr	Ser	Leu	Leu	Val	Val	His	Gly	Phe	
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Tyr	Val	Tyr	Leu	Ile	Ile	Glu	Pro	Trp	Tyr	Lys	Lys	Thr	Thr	Trp	Met	
		545			550				555						560	
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Arg Tyr Lys Ser Gly Gln Tyr Met Tyr Leu Asn Cys Ser Ala Val Ser	
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Thr Leu Glu Trp His Pro Phe Ser Ile Thr Ser Ala Pro Gly Asp Asp	
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Tyr Leu Ser Val His Ile Arg Val Leu Gly Asp Trp Thr Lys Gln Leu	
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Lys Lys Phe Glu Val Val Leu Leu Val Gly Leu Gly Ile Gly Ala Thr	
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Glu Glu Gly Ser Asn Arg Arg Gln Ser Pro Ile His Asn Met Val Thr	
740 745 750	
cct cct gtt tct cca tca aga aaa agt gag acg ttc aga acc aag aga	2304
Pro Pro Val Ser Pro Ser Arg Lys Ser Glu Thr Phe Arg Thr Lys Arg	
755 760 765	
gct tac ttc tac tgg gtc aca aga gag cag ggg tcg ttt gac tgg ttc	2352
Ala Tyr Phe Tyr Trp Val Thr Arg Glu Gln Gly Ser Phe Asp Trp Phe	
770 775 780	
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Lys Asn Val Met Asp Glu Val Thr Glu Thr Asp Arg Lys Asn Val Ile	
785 790 795 800	
gag ctg cat aat tac tgc acc agc gtt tac gag gaa ggg gac gcg agg	2448
Glu Leu His Asn Tyr Cys Thr Ser Val Tyr Glu Glu Gly Asp Ala Arg	
805 810 815	
tct gca ctt atc acg atg ctc cag tct cta aac cat gct aag cat gga	2496
Ser Ala Leu Ile Thr Met Leu Gln Ser Leu Asn His Ala Lys His Gly	
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Val Asp Val Val Ser Gly Thr Arg Val Met Ser His Phe Ala Arg Pro	
835 840 845	
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Asn Trp Arg Ser Val Phe Lys Arg Ile Ala Val Asn His Pro Lys Thr	
850 855 860	
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Arg Val Gly Val Phe Tyr Cys Gly Ala Ala Gly Leu Val Lys Glu Leu	
865 870 875 880	
cga cac tta tca ctg gat ttc tct cat aag acc tcc acc aag ttc atc	2688
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Arg	Gln	Gly	Arg	Ser	Gly	Arg	Ser	Asn	Ser	Val	Leu	Lys	Arg	Leu	Ala
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Ser	Ser	Val	Ser	Thr	Gly	Ile	Thr	Arg	Val	Ala	Ser	Ser	Val	Ser	Ser
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Ser	Ser	Ala	Arg	Lys	Pro	Pro	Arg	Pro	Gln	Leu	Ala	Lys	Leu	Arg	Arg
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Ser	Lys	Ser	Arg	Ala	Glu	Leu	Ala	Leu	Lys	Gly	Leu	Lys	Phe	Ile	Thr
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Lys	Thr	Asp	Gly	Val	Thr	Gly	Trp	Pro	Glu	Val	Glu	Lys	Arg	Phe	Tyr
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Glu	Cys	Ile	Gly	Met	Lys	Ser	Thr	Glu	Phe	Ala	Leu	Ala	Leu	Phe	Asp
			180					185					190		
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Leu	Asn	Glu	Ala	Glu	Val	Arg	Glu	Ile	Ile	Thr	Leu	Ser	Ala	Ser	Ala
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			260				265						270		
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Pro	Gln	Ser	Arg	Asn	Leu	Gly	Ala	Arg		Cys	Arg	Gly	Met	Lys	Tyr
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Phe	Leu	Phe	Asp	Asn	Trp	Lys	Arg	Val	Trp	Val	Met	Ala	Leu	Trp	Ile
			340					345					350		
Gly	Ala	Met	Ala	Gly	Leu</										

Ile Val Pro Phe Asp Asp Ser Leu Asn Phe His Lys Val Ile Ala Ile
 420 425 430
 Gly Ile Ser Val Gly Val Gly Ile His Ala Thr Ser His Leu Ala Cys
 435 440 445
 Asp Phe Pro Arg Leu Ile Ala Ala Asp Glu Asp Gln Tyr Glu Pro Met
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 Glu Lys Tyr Phe Gly Pro Gln Thr Lys Arg Tyr Leu Asp Phe Val Gln
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 Ser Val Glu Gly Val Thr Gly Ile Gly Met Val Val Leu Met Thr Ile
 485 490 495
 Ala Phe Thr Leu Ala Thr Thr Trp Phe Arg Arg Asn Lys Leu Asn Leu
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 Pro Gly Pro Leu Lys Lys Ile Thr Gly Phe Asn Ala Phe Trp Tyr Ser
 515 520 525
 His His Leu Phe Val Ile Val Tyr Ser Leu Leu Val Val His Gly Phe
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 Tyr Val Tyr Leu Ile Ile Glu Pro Trp Tyr Lys Lys Thr Thr Trp Met
 545 550 555 560
 Tyr Leu Met Val Pro Val Val Leu Tyr Leu Cys Glu Arg Leu Ile Arg
 565 570 575
 Ala Phe Arg Ser Ser Val Glu Ala Val Ser Val Leu Lys Val Ala Val
 580 585 590
 Leu Pro Gly Asn Val Leu Ser Leu His Leu Ser Arg Pro Ser Asn Phe
 595 600 605
 Arg Tyr Lys Ser Gly Gln Tyr Met Tyr Leu Asn Cys Ser Ala Val Ser
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 Thr Leu Glu Trp His Pro Phe Ser Ile Thr Ser Ala Pro Gly Asp Asp
 625 630 635 640
 Tyr Leu Ser Val His Ile Arg Val Leu Gly Asp Trp Thr Lys Gln Leu
 645 650 655
 Arg Ser Leu Phe Ser Glu Val Cys Lys Pro Arg Pro Pro Asp Glu His
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 Arg Leu Asn Arg Ala Asp Ser Lys His Trp Asp Tyr Ile Pro Asp Phe
 675 680 685
 Pro Arg Ile Leu Ile Asp Gly Pro Tyr Gly Ala Pro Ala Gln Asp Tyr
 690 695 700
 Lys Lys Phe Glu Val Val Leu Leu Val Gly Leu Gly Ile Gly Ala Thr
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 Pro Met Ile Ser Ile Val Ser Asp Ile Ile Asn Asn Leu Lys Gly Val
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 Glu Glu Gly Ser Asn Arg Arg Gln Ser Pro Ile His Asn Met Val Thr
 740 745 750
 Pro Pro Val Ser Pro Ser Arg Lys Ser Glu Thr Phe Arg Thr Lys Arg
 755 760 765
 Ala Tyr Phe Tyr Trp Val Thr Arg Glu Gln Gly Ser Phe Asp Trp Phe
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 Lys Asn Val Met Asp Glu Val Thr Glu Thr Asp Arg Lys Asn Val Ile
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 Ser Ala Leu Ile Thr Met Leu Gln Ser Leu Asn His Ala Lys His Gly
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 Val Asp Val Val Ser Gly Thr Arg Val Met Ser His Phe Ala Arg Pro
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 Asn Trp Arg Ser Val Phe Lys Arg Ile Ala Val Asn His Pro Lys Thr
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